

# Landscape goods and services related to forestry land use

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## 1 Introduction

It has been argued by Mather (1992) that forestry has passed through three distinct historic phases of development: a pre-industrial phase; an industrial phase; and a post-industrial phase. In the **pre-industrial phase**, forestry was principally but not exclusively a provider of local livelihoods, providing a wide range of timber and non-timber products. In Western Europe this role largely ceased by the late 19<sup>th</sup> century, although in post-communist countries there has been something of a resurgence of this function in newly privatised forest holdings, which comprise a significant part of the forest estate. Over the 18<sup>th</sup> and 19<sup>th</sup> century, the growth of imperial powers and the beginnings of the industrial revolution created a more mono-functional demand for specific types of timber, initially for shipbuilding or charcoal manufacture, but also for building material and paper manufacture. This has been termed the **industrial phase**. Although this monofunctional industrial style of forestry remains to some extent in some parts of Europe, the most recent **post-industrial phase** has created more varied styles of forestry with a stronger amenity or post-productivist function (Mather 2001).

This historic transition from multifunctional, largely subsistence-based pre-industrial forestry, through mono-functional industrial forestry to post-industrial forestry in which consumption functions come increasingly to the fore, frames the consideration of landscape goods and services. As forestry moves inexorably towards post-industrial multifunctionality, it is likely, some might argue inevitable, that landscape goods and services will emerge as more significant elements of forestry.

## **2 Definitions of the terms ‘forestry’ and ‘landscape goods and services’**

Here the term forestry will be interpreted as forest, woodland and trees. This broad definition makes it much easier to pick up the spectrum of uses and values of forests, woodland and trees and necessarily includes trees as linear and point features in the landscape. These can be seen to range from uni-dimensional wood raw material production on one hand to individual or grouped trees grown for purely amenity purposes at the other.

The term ‘landscape goods and services’ implies the range of product and service outputs that forest, woodland and trees can provide, either intentionally or unintentionally. However, the precise delineation of these goods and services is difficult. The Concise Oxford Dictionary (ed. Fowler and Fowler 1964) defines landscape as a ‘(picture representing, art reproducing or actual piece of) inland scenery.’ While there might be unambiguous agreement that the visible landscape captured by the eye of the recreationist or even resident is a landscape product and/or service, the biodiversity within that landscape tract or a separate non-timber forest product/service might be more questionably described as a landscape good or service.

Protagonists of the landscape ecology approach (e.g. Forman and Godron 1986) would legitimise consideration of the whole range of goods and services, even including the material products such as timber. Costanza et al. (1997) attempt to put a value on ecosystem services and natural capital and suggest a very high value indeed for the services at approximately twice the annual global GDP. Forests provide a wide range of services from carbon balance to water retention and regulation, recreation and the preservation of genetic resources and deliver just under 15% of the estimated total value of \$33 trillion. However, for the purposes of this chapter, the term landscape products and services is used to connote all of the visible scenic components of the forest/woodland landscape and its component parts, including biodiversity, constructed recreation facilities as well as the wider man-made and geomorphic landscape assemblage within which the forestry, woodland or trees sit. The human-manipulated bio-physical production functions of land are thus not considered as landscape goods and services, even though some conceptions of landscape ecology imply that landscape embraces a far wider set of resource components.

The landscape ecology approach presents a holistic, multi-disciplinary lens through which to view landscape goods and services. It has much in common with the human ecology view of forests, which is increasingly

advocated by foresters who seek to better understand the competing demands of different stakeholders on forest resources (Koch and Kennedy 2004; Lawrence 2004). The landscape ecology approach advocates an integrative systemic view of landscape embracing ecology, geomorphology and their interactions with human agency. Its focus on landscape structure, function and change points to a need to understand the different roles of forestry.

In Europe, there are small pockets of relatively undisturbed virgin forests, in the great forest swamps of Białowieża, in the high beech forests of the eastern Carpathians, but most forests and woodlands have been disturbed and altered by human agency. Forests and woodlands have fulfilled many functions, which have changed greatly over time. Forests constituted a major part of Europe's natural vegetation cover, out of which agriculture and settlements have been carved over the last three millennia or more. In some areas, forests have been retained, often through lack of human pressure for agricultural expansion, but also because managed forests provide the economically optimal land use. In other areas, residual trees remain, as field boundaries as in the '*bocage*' landscapes of northern France, or as small woodlands on poorer quality land in intensive agricultural areas. In the mountains of Europe, forests also fulfil important protection functions against avalanche and as means of soil and water protection.

European forest and woodland is not just a residue of natural forest. The original forest resource has been altered massively. In some areas, new species have been introduced as major timber species, particularly in Iberia with eucalyptus and in maritime north-west Europe with Sitka spruce. In other parts of Europe, there has been substantial boundary planting of trees, along roads and around fields to provide shelter. And, over the last millennium, land has been set aside for hunting or private amenity which, for the last 200 years, has often involved substantial planting of exotic tree species, as well as the retention and management of native species. Finally, in the last hundred years, tree planting has been increasingly associated with the provision of what is often termed 'green infrastructure' to support residential development.

It is thus evident that the provision of landscape goods and services in relation to forests, woodland and trees arises in part as a by-product of commercial forestry, partly as a component of earlier functional landscapes which remain as relict features in contemporary landscapes (see Hoskins 1955) and partly in the conscious creation and management of an amenity infrastructure for private and public purposes.

Many contemporary discussions of forestry assert the growing importance of multi-purpose forestry. Indeed in the wider debate about

productive rural land uses, multi-purpose land use, or, as it is often termed in agriculture, multifunctional land use, is now regarded as an integral part of the so-called 'European model' promoted by the European Commission. (Committee of Agricultural Organisations in the European Union & General Committee for Agricultural Cooperation in the European Union 1999) Amongst those multiple goods and services provided by land use, landscape goods and services are widely recognised as increasingly important.

### 3 Landscape meanings and identities

In the opinion of a number of authors (Appleton 1996; Schama 1995) landscape is not simply an aesthetic term, connected with the appreciation of beauty. Nor is it simply an artefact. Instead, landscape comprises the multiple social constructions of living and recreational space, the totality of surroundings in which people live, work and play. Appleton has argued that our interpretations of landscapes connect to basic survival instincts of early man. His 'prospect refuge theory' implies a preference for landscapes that offer both vistas (the prospect) and shelter and protection (the refuge); in other words the ability to see but not be seen. Primeval man required both the necessity of vistas to see either the threat or the prey and the shelter, which might be cave or forest edge. But in exploring landscapes more widely, or more explicitly the German term *Kulturlandschaft* or cultural landscapes, Appleton focuses on the trinity of factors of morphology, function and evolution, as advocated by Forman and Godron (1986).

Schama (1995) suggests a more culturally informed (rather than primeval) perspective on landscape values. He points to the importance of forests and woodlands in national identities, which is evidenced in the iconography of landscape associated with different identities in Germany, England or the United States. He notes how different cultures value different types of forest and woodland. Whilst the German landscape preferences are based principally on conifers, as evidenced in Caspar David Friedrich's paintings, Schama also detects a cultural interpretation of these values with roots running back to the pre-Christian, pagan traditions. In contrast, England's symbolic and iconic tree species is the oak, a national symbol of liberty and freedom. The natural redwood forests of the western United States have also acquired a specific almost religious, meaning in the iconography and cultural identity of the country.

Behind Schama's interpretation of nationally specific woodland cultures, it may also be possible to detect some more universal symbolism in trees and woodland. Foliate heads or 'green men' are a feature of thousands of stone and wooden carvings from the medieval period. These green men are found in Tibetan monasteries, Jain temples, Iranian and Turkish religious buildings and European parish churches and cathedrals from the Baltic to the Atlantic and the Mediterranean. A common theme is oak or sometimes hawthorn leaves emerging from the mouth of a male head. Their exact meaning is unknown. However, there are suggestions that they are symbolic of renewal and rebirth, and are most probably rooted in pre-Christian pagan values and tree worship.

Old trees are treated with enormous reverence throughout the world, from aged trees in China and Japan which become specific objects of pilgrimage, to the mariposa groves and other giant trees of the American west which again inspire millions of visits, to the individual trees with historical connotations that occupy a place in folklore and national identity in the UK (see Pakenham 2002; 2003 for some interesting examples). Certain long-lived trees, especially yew (*Taxus baccata*) are widely planted in churchyards, and there are frequent suggestions that these trees were already markers of pre-Christian religious sites.

Trees are also important in ritual events. An obvious example is maypole dancing in celebration of spring. Trees are seasonal markers, as evidenced in the huge cultural importance attached to cherry and other fruit tree blossom in oriental culture, or in the 'nature worship' in viewing the spectacular colours of the fall in the eastern United States and Canada.

There are though, evident ambiguities in the cultural values of forests. The 'wildwood' is a potent symbol of untamed space; a place of threat. It is a recurrent image in fairy tales and other children's stories. In these stories, it is often inhabited by evil people or animals that pose a threat to the established order, as evidenced in Kenneth Grahame's *Wind in the Willows* (Grahame 1908). However, the forest can also be privileged recreational space of the rich, often a hunting ground, a place of shelter or refuge, or a place from which free men (with Robin Hood the archetypal English folk hero) can attack unwelcome intruders. These ambiguities connect to widespread ambiguities about the countryside in general (Williams 1973), where positive images and interpretations of the core values of decency of country people and places can be counterpoised with more negative images of underdeveloped and threatening wild places.

Behind the national, or at times universal, attachment to forests, woodland and trees, individual woodlands and trees often have significant meanings for people who live adjacent to them (O'Brien 2005). Where proposals for new roads or housing development threaten specimen trees

or ancient woodland, local people are often drawn to protest. Trees and woodland provide markers for living space to which people become enormously attached. In such cases, there is often a general indifference to the species. This sentimental attachment to trees is not new. John Clare, the English Romantic poet, wrote about the great sense of loss he felt about the felling of a great lea (meadow) oak tree in his native Northamptonshire village in the late 18<sup>th</sup> century as a result of the enclosure of open fields. It is the familiarity of trees as a territorial marker that matters.

#### **4 Geographical differences**

The sheer diversity of European forests and woodland and the major differences in the level of woodland cover from 1% in Iceland to well over 50% in Finland or Slovenia inevitably frames how forest and woodland are perceived by both forest owners and the resident populations of these countries (Elands and Wiersum 2003). The physical extent of woodland cover is only part of the picture. There are also forest and woodland cultures that colour perceptions of woodland value which, when embodied in law and tradition, frame the way in which nations and regions engage with and perceive their forests and woodlands. Six broad regions can be identified: a North Sea/North West European group (Group 1); a Nordic group (Group 2); a Mediterranean group (Group 3); a Germanic group (Group 4); a Balkan/Eastern European group (Group 5); and a Baltic group (Group 6).

The grouping proposed here is intuitive. It is intended as nothing more than a means of exploring the diversity of forests and woodland in Europe, not as an end in itself, but because this diversity shapes the ways in which forests are perceived and utilised by policymakers, owners and the general public. There is considerable within-group variation and some countries such as France include regions belonging to more than one of these groupings. The differences in forestry between 19 European countries are well described in Jager (2005), as a result of a large EU funded COST action and experts from those countries compiling standardised country reports. The grouping used below was developed by the author in relation to this action<sup>1</sup>.

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<sup>1</sup> COST ACTION E 30 Economic Integration of Urban Consumers' Demand and Rural Forestry Production.

**Group 1** countries include Denmark, Iceland, Ireland, Netherlands and the UK. The region could arguably be extended into the northern half of France and Belgium. In these countries, forestry as an activity is almost exclusively grant- or subsidy-driven. The state forest sector in these countries is often significant and the state is a major provider of forest recreational goods and services. The Non-Industrial Private Forestry (NIPF) sector is characterised by a predominance of non timber production motives and by a wide recognition by policy makers and other rural actors that small-scale NIPF is important in landscape, biodiversity and recreational (often game) but not in relation to production. Ireland is something of an exception, with its greater emphasis on production, but this is still driven by a heavily subsidised farm forestry programme. Market values, particularly of small woodlands prices remain high, but for non-timber reasons. These countries are generally characterised by high levels of environmental consciousness and strong public interest in forestry and woodland.

**Group 2** countries comprise the Nordic group of countries, excluding Denmark, where the prevailing private sector model is of reasonably sized forestry units (averaging somewhere around the 50ha mark), which have historically been associated with farms, but are increasingly disengaging from agriculture and experiencing a growth of absentee ownership. Farm woodland has historically been an important complementary activity to farming and strong farm forest associations support forest management activity. Norway has experienced a sharp decline in NIPF activity, largely occasioned by its low profitability. The state forest sector is quite large, and there is also a significant amount of industrial ownership of forests. There are strong public access rights in all forests and wild berries and fungi are widely gathered, both commercially and recreationally (Saastamoinen 1997). These countries are also highly environmentally conscious and seek to balance environmental protection and production functions of forests.

**Group 3** countries are those fringing the Mediterranean. They include Italy, Greece and Portugal and southern parts of France. In this region under-management of small-scale woodland is prevalent with large amounts of abandonment of management altogether. Average size of private forest holdings is small. Woodfuel is an important use of timber. Non-timber forest products (NTFPs) are very important in some areas. There are pockets of more intensive timber exploitation, for example in Galicia, parts of Portugal and in the northern parts of Italy. There are also extensive areas of municipal forest and state forest ownership, many of which deliver important recreational and landscape, as well as timber functions.

**Group 4** countries comprise the core of German-speaking countries of Central Europe, including Austria, Germany and Switzerland. They tend to have a high degree of forest cover, a significant timber production base to their forest management, although NTFPs are also important, especially game and mushrooms. In mountain regions, protection functions are very important. With the exception of Switzerland, average holding size is above 10 hectares. There are substantial areas of municipal forest with strong traditions of multifunctional management. Protection forests are very important in mountainous regions (Glück and Weber 1998).

**Group 5** countries comprise the Central and Eastern European (CEE) model. In these countries there has been a politically motivated restitution of substantial areas of woodland (often the poorer quality woodland), but the state still retains a substantial area of woodland, including important environmentally sensitive areas. Restituted woodland is important for subsistence-related NTFP extraction and fuelwood use is significant. Certain activities such as mushroom gathering and berry picking are important social and cultural activities as well as delivering subsistence support to poor rural households.

**Group 6** countries comprise the Baltic states, which can be seen as a hybrid between the Nordic model and the CEE model. There is a desire too create a Nordic model within a political landscape of restituted holdings, although the holding size is much lower. Further, many of the new owners reside in cities rather than on farms and have no tradition of managing woodland. NTFPs and woodfuel are very important. The state has retained a substantial proportion of forest and uses the forest resource for both wood raw material production and recreational and environmental functions.

Within different parts of these regions, trees and woodland may be perceived in very different ways. In rural Finland, a production-centred vision of forestry is widely accepted by the general public, whereas in more peri-urban areas a more amenity-driven perspective on forests as contributors to landscape and biodiversity prevails. Elands and O'Leary (2002) and Elands and Wiersum (2003) describe a range of collectively held attitudinal positions or forest and woodland discourses, which they argue are determined by both the extent of woodland and prevailing management practices. They also affirm the relative importance of forests as regional identifiers, as symbols of environmental well-being and as providers of recreational access space rather than their wood production functions.

As well as recognising the different regional discourses about forestry within Europe, it is also pertinent to recognise the importance of location as a determinant of value with respect to forest, woodland and trees (Woodland Trust 2004). To the economist, value is a function of price times quantity. Proximity to large numbers of people increases the quantity of consumption, thereby conferring on peri-urban woodland both market and non-market values that might not initially be anticipated. For example, a visually unattractive predominantly Sitka spruce plantation with car parking facilities a few miles from the edge of the Scottish city of Aberdeen receives in excess of 200,000 recreational visits per year. Biodiversity-rich and visually attractive native pine woods such as those at the remote Glen Affric in the Scottish Highlands receive a much smaller number of annual visitors. Likewise, the market for 'warm-glow' ownership of amenity woodland declines significantly with distance from urban area.

## 5 The range of landscape goods and services

Forests and woodland offer an enormous range of landscape goods and services. These range from intentional establishment or management of forest, woodland and trees to deliver landscape functions to inadvertent but nonetheless highly important provision of landscape products and services as the result of using woodland for some other purpose. The formal production of forest and woodland landscape for amenity was historically undertaken for wealthy landowners and has resulted in the creation of the great landscape gardens of aristocratic houses. Since the mid-19<sup>th</sup> century, or perhaps a little earlier in some countries, there has been a conscious provision of landscape goods and services in publicly owned forests and woodland, which owes less to wealth and more to municipal beneficence.

In exploring the landscape goods and services provided by forests and woodland it is convenient to group them and consider the challenges created in their provision. Willis et al. (2003) suggest three main types of non-timber benefit arising from forestry, all of which are encompassed by the term 'landscape goods and services'. The first function is *biodiversity*, and while this might not be seen strictly as a landscape function, the viewing of wildlife in its natural setting is identified as one of the principal activities participated in by visitors to forests. The second function is the provision of *recreational services*, which is a broad term encompassing all the types of recreational provision from informal recreational provision for day visitors, to formal recreation and tourist provision for campsite,

mountain bike trails etc. The third function is the *pure landscape function*, whereby the forest or woodland simply provides a context in which people live or recreate. This pure landscape value is the value associated with the English dictionary definition that emphasises the ‘picture representing, art reproducing or actual piece of inland scenery.’ Inevitably, all three interact and overlap and what looks like a relatively straightforward distinction on paper may not be so clearly categorised in the eyes of the individual visitor.

The biodiversity function can be seen in part as a landscape service. Often analysts make a distinction between wildlife or biodiversity providing a non-use benefit and wildlife as a use benefit. The first derives from the knowledge that forests are repositories of valued biodiversity; the second from the actuality or the prospect of seeing wildlife. The latter is increasingly provided for by a variety of interpretive means, from video cameras on the nests of rare birds to nature trails and interpretive exhibits in visitor centres. Within the UK, several rare species from the Capercaillie (*Tetrao urogallus*) to the Black Grouse (*Lyrurus tetrix*), Sea Eagle (*Haliaeetus albicilla*) and the Osprey (*Pandion haliaetus*) are all actively managed within forests, by Non Government Organisations (NGOs), government bodies (particularly the state forestry service) and by private landowners under nature reserve and other agreements or through personal private interest. In some cases, high profile species, such as the osprey, have become the primary focus for the development of a visitor attraction, as at Loch Garten in the Scottish Highlands.

The second function, recreation provision, provides a wide-ranging set of landscape goods and services. These goods and services are mostly, but not universally provided by the public sector, and often entail the provision of a hub around which access is created to a specially managed area of forest or woodland. Such hubs may comprise at simplest a car park area at the edge of the forest with a list of way-marked trails emanating out from it, or at their more sophisticated multi-media visitor centres which provide (hopefully) a window on some facet of forestry deemed to be of interest to the visitor. Their origins date back to the early-19<sup>th</sup> century when Claude François Denecourt opened up trails in Fontainebleau in France (Schama 1995, p546ff.).

Some areas of forests and woodland are venues for commercial recreational facilities. Early in its history of provision of recreational facilities, the UK Forestry Commission made a distinction between commercial and informal recreation. Whilst the former could operate under market rules, such as campsites and car rallying venues, the latter was provided as a public service. There are numerous examples of commercial recreation, but the range of opportunities is necessarily

influenced by the disposition of property rights (see next section). Forest roads can offer good opportunities for pisted cross-country ski trails. Some communally owned forests in Italy generate substantial revenue from commercial ventures associated with downhill ski-ing (Edwards, (2000). Forests are also widely used for Christmas fairs in German-speaking countries. In many countries, there are systems for regulating mushroom picking, based usually on permits and sometimes volume of mushrooms collected.

The extent of recreational access to forests is conditioned by the extent to which there are either legal (*de jure*) or *de facto* rights of access over private land. In the Nordic countries and Scotland, there is a legal right often described by its Nordic term '*allemensretten*' or everyman's rights. In a range of countries in North and Central Europe, including the UK, Germany, Switzerland, France and Austria, there is an intermediate level of public access with almost free access rights to public forests and more limited and generally linear access onto farmland and private forest land. In Southern Europe, public access rights to private forests are generally more constrained.

The third type of landscape good and service comprises the delivery of forestry landscape as a scene for passive viewing. This manicuring and management of the landscape reached its peak in the contrived landscape parks of aristocrats in 18<sup>th</sup> and 19<sup>th</sup> century Europe. At different times, different styles prevailed with the more formal approaches suggestive of a tamed natural world, which were replaced at a later date by more naturalistic and romantic interpretations.

In the 20<sup>th</sup> century, this manipulation of the forest landscape for pleasant viewing has been embraced even by those who created the mono-functional industrial forest in public and private plantation forests. Paradoxically, the public agencies that were mostly fully committed to the industrial model (especially where driven by strategic considerations as in the UK), were also the best able to respond to new political imperatives to deliver landscape outputs. In recognition of the rather unsympathetic rectilinear plantings that characterised much plantation forestry in the UK, the Forestry Commission responded by employing a team of landscape architects to ameliorate the impacts of their forestry activity. The general approach was to soften the edges of exotic conifer plantations by broadleaved planting, to leave more land unplanted within the forest and, more recently, to avoid planting right up to streams and rivers. This has created a more mixed landscape that also delivers enhanced biodiversity.

The impact of forestry on landscape goods and services is conditioned by the extent of forest cover, the style of forest and the landscape mosaic within which it sits. Generally, and regardless of wider ecosystem values

and functions, the public favour (for visual reasons) increased forest cover up to a certain point (perhaps between 30 and 50%) after which increased forest cover reduces the perceived quality, although this figure might be expected to be lower a) where the forestry is mono-species and intrusive in the landscape and b) where the historic land use of an area has a low proportion of tree cover.

One facet of public sector forestry throughout Europe has been the management of trees in protected zones, such as national parks or key nature conservation sites. This has often resulted in landscape- and biodiversity-driven forest management that stresses the maintenance of continuity of landscape and biodiversity at the expense of production functions. These protected area forests and woodlands can be seen as the most advanced form of post-productivist forestry. Many NGOs, as well as public sector forest owners, are committed to maintaining or enhancing biodiversity and landscape functions of forests and woodlands in their ownership and/or care.

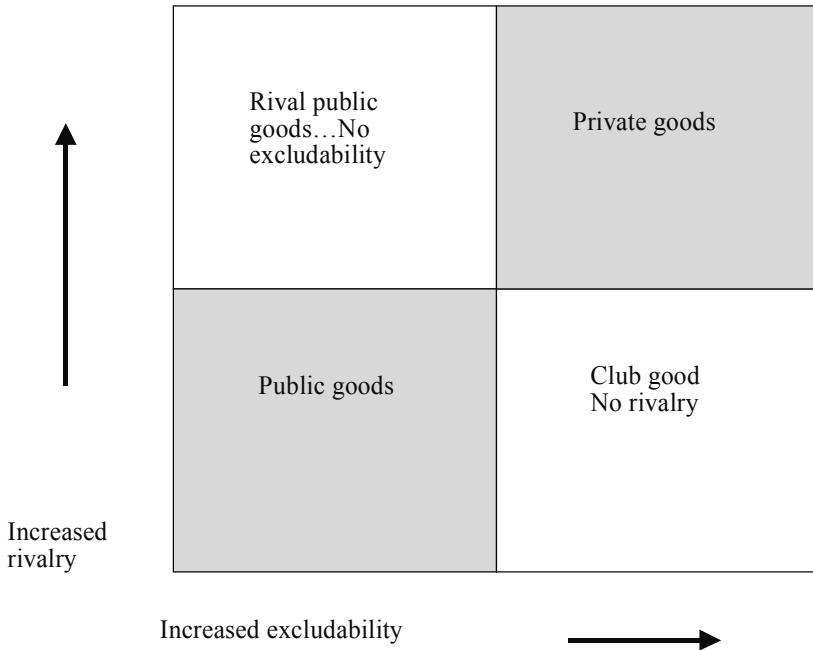
## **6 Mechanisms for the provision of forest and woodland landscape goods and services**

The exploration of the means by which landscape goods and services are provided in the forest sector is an important concern. Many of the landscape goods and services are simplistically characterised as non-market public goods. This tendency to oversimplify the types of recreational and environmental good and service provided by forests into market or non-market goods has been challenged in major recent study (Mantau et al. 2002). They argue that the institutional structuring of property rights must be recognised. The property rights relating to Recreational and Environmental Services (RES goods) is highly variable from one country to another and, furthermore, such rights are less a fixity and more an evolving entity, which respond, more or less effectively, to prevailing social and political values.

The theoretical framework of the public good private good split is best considered as a spectrum between pure public goods and pure private goods. This is shown diagrammatically in Figure 1.

Some landscape goods and services are necessarily private goods, where one person's consumption limits another person's. An obvious example of this is game hunting/shooting. Over large parts of southern England, sporting shooting is the principal use made of woodlands. Sporting rights are jealously guarded and high rents can be commanded for high quality

pheasant shoots. Often the landscape is constructed in particular ways with significant woodland planting and management to enhance the quality of land for game hunting, in order to provide holding areas, release pens and to ensure good quality high shots. This type of forestry also delivers wider landscape and ecological benefits as a by-product.



**Figure 1.** The Private Good : Public Good Continuum.

Some quasi- public goods are characterised by a degree of rivalry in consumption. A typical example is an informal recreational site where, at a certain level, crowding begins to reduce the satisfaction of visitors. With other quasi-public goods, it is possible to identify environmental goods and services that are excludable but non-rival. This offers scope for clubs (usually in the form of NGOs) to acquire access rights to resources and make them available only to members. Indeed, Davidson and Wibberley (1977) cite an example of a recreational access club based on private woodland access, rather than ownership. In many cases, NGOs, such as the Woodland Trust in the UK, acquire ownership of the resource rather than narrowly defined rights.

The rights of private property owners have been increasingly compromised by legislation. New laws can often impose standards of management

(especially through regulation of sanitary fellings or new plantings), create obligations to protect particular habitats or species (the EU Natura 2000 Directive is an important instrument in this respect), or fundamentally alter property rights relating, for example in relation to recreational access (as has occurred recently in Scotland). The extent of the legislation surrounding forest owners limits their room for manoeuvre, but may actually enhance the delivery of landscape goods and services through legally binding obligations to enhance the appearance of forests or provide opportunity for enhanced biodiversity.

The pure public good is typified in the case of forestry by the contribution of forest and woodland to the fabric of the purely visual landscape, often valued simply as the backcloth through which passive car-borne motorists drive. This is by and large non-rival in consumption and non-excludable, though potentially affected by congestion. In densely forested areas, the creation of viewpoints and the opening up of the landscape through roadside felling might significantly increase amenity values in densely forested areas, where the alternative is the drive (or walk) along a 'green corridor' of dense forest.

A further important consideration is the extent to which the *perception* of landscape goods and services as a public good by both public authorities and landowners actually compromises the scope for their provision as a private good by the private forest owner. Further, the provision of recreation facilities such as mountain bike trails in public forests may actually reduce the scope for the private sector forest owner's provision of such a facility by turning a potentially marketable good into a quasi-public good (termed 'crowding out' in economic theory). In some parts of the UK, (such as Scotland and Wales, where there have been major public sector commercial recreation developments in forests), private sector forest owners are often understandably irritated by the corporate muscle of the public sector and its ability to engage in and bank-roll high profile recreational or tourist enterprises.

The normal mechanisms for provision of landscape goods and services are either through the market, in the case of private provision of a 'normal' good, through subsidy of private owner, where there are elements of non-excludability or non-rivalry (i.e. public-ness) about the good/service in question, or through public provision in public forests. All these pathways of provision are routinely found in practice though, as indicated earlier, the mode of provision is in part determined by the disposition of property rights.

One rather particular form of ownership that may be of increasing importance in some countries is what might be termed 'positional good' ownership. The term positional good was coined by Hirsch (1976). He

argued that in an era of general affluence, widely available consumer goods deliver diminishing marginal utility, but goods with absolute scarcity command a premium value. His examples were old master paintings. It might be argued that ancient woodland or rare habitat could be seen as positional goods, especially in countries with modest forest cover. In consequence, it is not essential for the forest or woodland to deliver market outputs for it to have a market value. The value derives from the consumption of the benefits of ownership, sometimes described as a 'warm glow effect'.

In practice, there is likely to be a *mélange* of modes of provision of environmental goods and services from forests. A publicly owned forest may have franchises for selling food or operating bike hire facilities. A private forest owner may draw down grants or subsidies. However, if the forest or woodland is acquired as a positional good, there may be no need to subsidise the private owner, even if his purchase and/or management of the resource inadvertently delivers public goods for the wider public (Slee 2005).

## 7 Conclusions

In many situations, landscape goods and services associated with forestry constitute an indivisible bundle of socially constructed components that differ from person to person and place to place. These goods and services fulfil many functions: as green infrastructure within which to live and recreate; as a setting for recreational activities ranging from casual dog-walking to narrowly defined activity sports; and as a repository of wildlife and biodiversity for active viewing.

At the heart of any consideration of the value of landscape goods and services in relation to forestry lies a problem of culturally constructed values. These culturally constructed values are not simply manifestations of different forest-related values of different nations, constructed through the experiences of their different histories and their differential engagement with trees and forestry, but also represent the different attitudes of different communities of scientists, from natural scientists to economists and other groups of social scientists. Although a degree of interdisciplinary synthesis can be found in the landscape ecology approach, it is important to acknowledge the different interpretations of the term landscape, from a narrow visual term with aesthetic connotations in some situations to a much more all embracing ecosystem view in others.

Even if we adopt a narrow economic interpretation of these landscape goods and services, it is clearly evident that they are of considerable economic value. Willis et al. (2003) suggest that they may be worth upwards of £1,000 million (€1,400 million) a year in the UK alone. Other work indicates significant spatial variability in these values, with areas close to centres of population having much higher values per unit area. Indeed, in many peri-urban situations, it is almost certain that the non-timber non-market values actually exceed the timber values by a considerable margin. However, behind these economic values, lies a more complex set of layers of non-economic values, which are more spiritual and more individually constructed and which may not be so readily convertible into economic units of value. These less marketisable values of forest goods and services are by no means unimportant.

The great range in the levels and types of forest cover from one part of Europe to another mean that it is necessary to exercise great caution in generalising about the landscape values of forests. Forest rich countries have often taken a markedly more production-oriented view of forests, whereas forest poor countries often value their limited forest resources for their non timber outputs.

Forests are not universally revered as beneficial contributions to landscape. Evidence from Sweden (Drake 1992) shows how the public do not support the further extension of the forest onto open farmland. Amenity groups in England and Scotland have challenged the development of new plantation-style forestry with exotic species on high nature value land. Native woodland seems to be more highly valued as a landscape resource than non-native woodland. In part this arises because native trees confer a sense of place and in part because of the management practices that operate in intensively managed plantation forestry generate significant disamenity.

The sheer complexity of these values and their poor fit within a conventional economic frame of analysis makes for a real challenge in ensuring the maintenance or enhancement of the forest landscape resource. There is a strong case for the imaginative use of policy instruments and for deeper inquiry into the motives that drive private woodland owners. The real challenge with landscape goods and services and forestry is to connect the values of forest owners to the more complex aspirations and values of wider society, with a view to optimising the delivery of this particularly complex bundle of goods and services.

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